KOSHELEVA,I.M.; KUSAKOV,M.M.

Method of preparing and analyzing model well cores from quartz
sand.  Trudy MNI no.14:167-183 '55.                (MLRA 8:11)
    (Geological modeling) (Oil well logging)

KISLINSKIY, A. N.

USSR/Chemical Technology - Chemical Products and Their Application.  Treatment of
Natural Gases and Petroleum.  Motor Fuels.  Lubricants,
I-13

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 62631

Author: Kislinskiy, A. N., Kusakov, M. M.

Institution: None

Title: Instrument for the Characterization of the Temperature Dependence
of the Viscosity of Lubricating Oils

Original
Periodical: Zavodskaya laboratoriya, 1955, 21, No 1, 102-105

Abstract: There is proposed a new variant of the determination method using
the falling ball principle, which permits to obtain as a result of
a single experiment the curve of temperature dependence of the vis-
cosity of lubricating oil within a wide interval of low temperatures.
The determination is made by means of the cryoviscosimeter instru-
ment.  In addition to determining the viscosity within the tempera-
ture interval from $\sim 20^\circ$ to the lowest, at which the oil loses the

Card 1/2

USSR/Chemical Technology - Chemical Products and Their Application. Treatment of
Natural Gases and Petroleum. Motor Fuels. Lubricants,
I-13

Abst Journal:  Referat Zhur - Khimiya, No 19, 1956, 62631

Abstract:  properties of a Newton's liquid, the instrument can be used to
determine the viscosity anomaly of the oil and the temperature
at which it arises, to determine the temperature dependence of
the so-called "apparent viscosity," and the dependence of static
shear stress upon temperature. The instrument can be used to
measure viscosity of both colorless and colored oils.

Card 2/2

KUSAKOV, M.M.

277. Investigation of the Interaction of Lubricating Oil
With Metals. Issledovanie vzaimodeistviia smazochnykh ma-
sel s metallami. (Russian) G. V. Vinogradov, M. M. Kusakov,
B. S. Zeliodii, and E. A. Tiurina. Nauch.-
tank SSSR, v. 27, no. 9, Sept. 1948, p. 25-10

Relations of metallic solids and physical of s-
surfaces, effect on temperature. Types of lubricants for various
duty. Graphs.

KOTYAKHOV, Fedor Ivanovich, professor; KUSAKOV, M.M., redaktor; KOVALEVA,
    A.A., vedushchiy redaktor; POLOSINA, A.S., tekhnicheskiy redaktor

[The physics of oil deposits] Osnovy fiziki neftianogo plasta.
Moskva, Gos. nauchno-tekhn. izd-vo neftianoi i gorno-toplivnoi
lit-ry, 1956. 363 p.                                    (MLRA 9:8)
        (Oil fields)    (Petroleum geology)

AUTHORS:    Kusakov, M. M. , Mekenitskaya, L. I.

TITLE:      The Thickness of Thin Layers of "Fixed" Water (Tolshchina
            tonkikh sloyev "svyazannoy" vody)

PERIODICAL:  V sb. : 4-y Mezhdunar. neft. kongress. Z. Moscow, Gostopte-
             khizdat, 1956, pp 261-271

ABSTRACT:    Presentation of results of investigations relative to the thickness
             of liquid layers and their stability in the following systems: 1) A
             solid underlayer, a thin layer of water, and gas; 2) a solid under-
             layer, a thin layer of water, and a hydrocarbon liquid; 3) a solid
             underlayer, a thin layer of water, and petroleum. Quartz or glass
             served as the solid underlayer. The investigation comprised thin
             layers of aqueous solutions of electrolytes and various types of
             reservoir water. The thickness of the thin layers was determined
             by means of a measurement of their electrical conductivity. A
             thin layer was formed along the wall of a capillary, filled with the
             liquid under investigation, when an air bubble or a drop of hydro-
Card 1/2     carbon liquid or petroleum is introduced into the capillary. The

The Thickness of Thin Layers of "Fixed" Water

results of the investigations show that, depending on the combination of the adjacent phases, the thin layer can produce either a positive or a negative wedging effect. In the first instance it is positive and retains an equilibrium thickness over an indefinite time, whereas in the second case it is gradually displaced by the liquid contained in the drop introduced into the capillary. The realization of the one or the other effect depends on the ratio of surface tensions along the two boundaries of the thin layer. The influence of the composition of the electrolytes and the temperature on the thickness of the layer was investigated. Bibliography: 26 references.

S. V. Nerpin

Card 2/2

KUSAKOV, M.M.

Composition of the naphthene portion of the kerosine frac-
tion of Tulmazinsk (Devonian) crude oil.  A. V. Topchiev,
L. M. Rosenberg, M. M. Kusakov, and M. V. Salishkina
(Petroleum Inst., Moscow).  Izvest. Akad. Nauk S.S.S.R.,
Otdel. Khim. Nauk 1955, 1109-19.—Ultraviolet spec-
trography of the aromatic hydrocarbons formed by de-
hydrogenation (Zelinskii, C.A. 6, 598) of the naphthene
portion of the kerosine, showed that the kerosine contains
meta and para isomers of alkylcyclohexanes, including mono-
alkyl branched derivs., as well as trialkylcyclohexanes with
side chains in the 1,3,5- and 1,2,4-positions.  Among the
tetraalkylcyclohexanes 1,2,3,4- and 1,2,3,5-distributions
predominate.  The presence of penta- and hexaalkylcyclo-
hexanes is not excluded by this work.  The kerosine con-
tains also dihydroacenaphthene, and decahydronaphthalene
and its homologs, but dicyclohexyl is absent.  G. M. K.

VINOGRADOV, G.V.; KUSAKOV, M.M.; BEZBORODKO, M.D.; PAVLOVSKAYA, N.T.;
    ZELENSKIY, V.D.; KREYN, S.E.; BOROVAYA, M.S.

    Wear-preventive properties of petreleum eils. Khim.i tekh.tepl.
    ne.1:61-3 of cever   Ja '56.                    (MLRA 9:7)
                    (Petreleum)

KUSAKOV, M.M.

The mechanism of additive action by the use of labelled organic thiophosphites. G. V. Vinogradov, M. M. Kusakov, P. I. Sanin, Yu. S. Zaslavskii, E. A. Razumovskaya, E. V. Ol'vanova, and D. V. Kvaleva. Khim. i Tekhnol. Topliva 1956, No. 6. (1-20). The complex from the reaction of BuBr (0.6 mole) and $S^{35}$ C(NH$_2$) (0.16 mole) in 44 ml. 95% EtOH after treatment with aq. NaOH yielded 28.51 g. i-butanethiol I was the reaction of $S^{35}$ 4.5 × $10^5$ impulses min. g. The labelled organic phosphite (II) was prepd. at 45° from i-butane thiol and PCl$_3$ (0.064 mole) in ... The activity of II was 4.05 × $10^5$ impulses min. g. The $P^{32}$-labelled tributylphosphite (III) 4.47 × $10^5$ impulses min. g. was prepd. in an analogous way by using $P^{32}$. These additives were dissolved in the naphthene-paraffin oil MC-20. Disks (15 mm. in diam. and 1.5 mm. thick, made of stainless steel 30 KhGSA and electrolytic Cu were attached to glass holders and submerged in 2.5 g. of a soln. of II and III, resp., for 2 hrs. The effect of time and temp. on the amt. of $P^{32}$ and $S^{35}$ deposited on the metal surfaces was measured by β-emission. Increasing the temp. increased the amt. of both elements on the steel, with a max. deposit contg. $P^{32}$ 4 and $S^{35}$ 0.02% of the total amt. in the soln. at 160°. Above this temp., the radioactivity of the disks sharply decreased. This confirmed the earlier observations (V. et al., Vestnik Akad. Nauk S.S.S.R. 25. No. 9, 35(1955)) that interaction of the elements in the additives and metals is chem. in nature. When the disks were treated first with unlabelled tributylphosphite and then with II there was a fold decrease in the radioactivity indicating that the formation of a protective phosphide coating hindered the formation of sulfide. The amt. of reacted isotopes as a function of time was measured at 20, 40, 60, 90, and 150°. After about 60 min. the rate of reaction of $P^{32}$ with steel at 90° reached a const. value of 0.75 r/sq. cm. Cu was found also to be an acceptor of $P^{32}$ and $S^{35}$ though much more reactive.

A. P. Kotloby

KUSAKOV, M. M

USSR/Chemical Technology.  Chemical Products and Their   I-14
          Application--Treatment of natural gases and
          petroleum.  Motor fuels.  Lubricants

Abs Jour:  Ref Zhur-Khimiya, No 3, 1957, 9272

Author  :  Kusakov, M. M. and Panov, V. V.
Inst    :  Academy of Sciences USSR
Title   :  Study of the Composition of Petroleum and Petro-
           leum Products and Methods for Its Determination
           (All-Union Conference)

Orig Pub:  Vestn AN SSSR, 1956, No 6, 130-133

Abstract:  A survey of the reports and transactions of the
           All-Union Conference convened by the Academy of
           Sciences USSR and the Ministry of Petroleum
           Industry held in Moscow on 16-20 January 1956.
           The conference dealt with the study of the com-
           position and properties of petroleum, light
           petroleum products, lubricating oils, and the
           high-polymer constituents of petroleum as well as

Card 1/2

USSR/Chemical Technology.  Chemical Products and Their    I-14
     Application--Treatment of natural gases and
     petroleum.  Motor fuels.  Lubricants

Abs Jour:  Ref Zhur-Khimiya, No 3, 1957, 9272

Abstract:  With the development of methods for their inves-
           tigation and determination and the further
           development of present work along these lines.

Card 2/2

Кузаков, М. М.

**Determination of the interfacial tension of crude oils and water.** M. M. Kusakov and I. M. Kocheleva. *Trudy Neft. Inst. I. M. Gubkina* 1936, No. 16, 52-8.—The interfacial tension (I) of Zybzak, Kokaitinsk, Il'sk, and Radaevsk crude oils and water was detd. at 20-80° by the following methods: max. bubble pressure, drop-wt., and the sessile drop. The Il'sk oil was tested in contact with distd. water, the others in contact with connate waters. The accuracy of results obtained by different methods was within 3% for values in the range of 50 erg/sq. cm. and within 6% for values in the range of 5 erg/sq. cm. I decreased with an increase in temp., with exception of the Kokaitinsk oil, which did not show any change with temp. — T. Durbak

Thickness of thin films in contact with water. M. M. Kusakov and L. T. Mikhailova. A study was made of the following boundaries: air-soln of electrolyte, quartz, air-quartz; liquid hydrocarbon, liquid glass, quartz, air-quartz (water occurring below the petroleum layer)-quartz; petroleum-brine, glass, petroleum-"brine"-quartz. The method of measurement was on electrocond measurements of the film for each resistance of all systems was derived by conditions in which capacity and be disregarded. The detn. of the a, soln permits the measurement of the layer formed at the boundary with liquid hydrocarbons Because

KUSHNIR, M.M, MEREVITS...
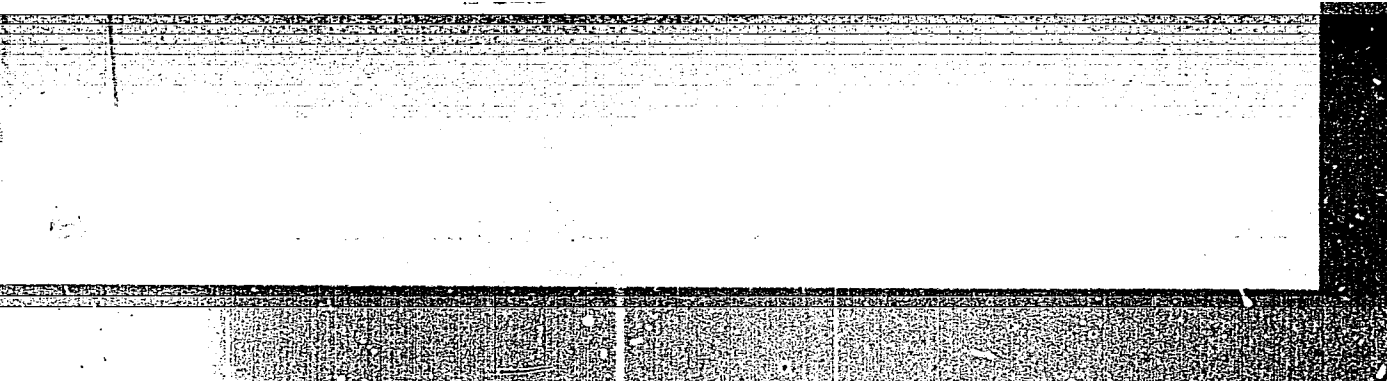
layer with concn. of electrolyte shows that thickness of the layer sharply decreases with increasing concn. in the range of small concns. and is considerably smaller in the range of high concns. of electrolyte. In the formation of the thin layer of aq. solns. between liquid hydrocarbon surface ($C_7H_{16}$) and glass, the thickness of this layer decreases with time, is less at higher than at lower temps., and the displacement of the layer does not depend on temp., and increases somewhat with increased valence of cation. Concn. of electrolyte influences time of existence of the layer; with high concn. of electrolyte...

somewhat with ... ... ... on temp., and in...
electrolyte influences thin. of existence of the layer; with
high concn. of electrolyte the layer is quickly displaced
and with soln. of lower concn. the layer is displaced with
difficulty. In order to det. the thickness of the aq. layer in
the zone of capillary gas-bearing pores of the collector, the
thicknesses of the thin layers of different "brines," confined
with air on one side and quartz on the other, were detd.
Samples of "brines" from various Russian deposits were
studied; and a desolvation activity of the salt ions occurring
in the brine was indicated; the av. thickness of the thin
layer of brine on the boundary with air (in the case where
the layer exists) is about $5 \times 10^{-4}$ cm. On the basis of exptl.
data the hypothesis can be made that in the majority of cases
the water may not be in the form of a flattened film overlay-
ing the canal-wall pores of the collector and that petroleum
comes into contact with the surface of the rock. The
film of water may cover the canal-wall pores even in cases
of low surface tension of water on the boundary with oil.
In gas-bearing collectors the film of water may exist ...
slightly mineralized ...

KUSAKOV, M.M., dokter khimicheskikh nauk; PANOV, V.V., kandidat tekhnicheskikh
    nauk.

    Methods of studying the composition of petroleum and petroleum products
    (all-Union conference). Vest.AN SSSR 26 no.6:130-133  Je '56.(MLRA 9:9)
                    (Petroleum)

Kusakov, M. M.

Pressure effects on the viscosity and the structure formation of lubricants with additives. M. M. Kusakov and L. A. Konovalova. Doklady Akad. Nauk U.S.S.R. 106, 502-5(1920).—The effects of depressor additives and of polyfunctional additives to lubricating oils on their viscosity and their structure formation were studied in a high-pressure viscometer (Zolotykh, Trudy Moskov. Gosudarst. Inst. Mer i Izmeritelnykh Priborov 1. 37(1950)) under pressures reaching 6000 kg./sq. cm. Up to 50° and at pressures up to 300 kg./sq. cm., the reciprocal of the viscosity piezo-coeff. is a linear temp. function. The viscosity anomalies at 30° with paraffin addn. to the lubricating oil became noticeable at 1200 kg./sq. cm., pressures, and became greater at higher pressures. The paraffin addy. in oil is lowered by pressure, and the depressor effect, studied in detail at low temps., is similar to the pressure effect, although at low temp. it is caused by the intensity drop of heat motion, and at high pressure by a reduction in free vol.    W. M. Sternberg

Kusakov, M. M.

The thickness of multimolecular layers of aqueous electro-lytic solutions on glass or quartz in contact with air. M. M. Kusakov and L. I. Mekenitskaya (I. M. Gubkin Petroleum Inst., Moscow). Doklady Akad. Nauk S.S.S.R. 167, 855-7 (1958).—The thickness of layers of aq. electrolyte solns. on glass or quartz in contact with air or hydrocarbon liquids was measured by detg. the elec. resistance of the thin cylindrical layer between an air bubble or a drop of the liquid (cf. following abst.) and the inner surface of a glass or quartz capillary tube filled with the soln. An a.c. bridge was used under such conditions that the capacity and the induction resistance could be neglected. KCl, BaCl₂, and AlCl₃ solns., 0.01–1.4N were used, and the sur-face cond. could be disregarded. Preliminary tests showed that at 400–6000 cycles/sec. and 20–100 v., the length of the air bubble did not affect the layer-thickness measurements. The thickness decreased with increasing temp., and may even become zero at sufficiently high temps., and it de-creases with the cation valency in the order KCl, BaCl₂, AlCl₃. Layer-thickness detns. in rock interstices showed that strongly mineralized waters formed no equil. wetting films, whereas weakly mineralized waters, basic in reaction, do form such films, of around $6 \times 10^{-4}$ cm. in thickness.

W. M. Sternberg

KUSAKOV, M. M.

USSR/Physical Chemistry - Surface Phenomena. Adsorption.          B-13
          Chromatography. Ion Exchange

Abs Jour    :  Referat Zhur - Khimiya, No 2, 1957, 3990

Author      :  Kusakov M M., Mekenitskaya L.I.
Inst        :  Academy of Sciences USSR
Title       :  Experimental Investigation of Thickness of Polymolecular
               Layers of Aqueous Solutions of Electrolytes on Glass and
               Quartz at the Boundary with a Hydrocarbon Liquid

Orig Pub    :  Dokl. AN SSSR, 1956, 107, No 5, 715-718

Abstract    :  As a continuation of previous work (RZhKhim, 1956, 77760)
               an investigation is made of the decrease in thickness
               and subsequent disintegration of thin layers of aqueous
               solutions of $AlCl_3$ and KCl of different concentration,
               located between the wall of the capillary and heptane
               (or a solution of a surface active compound in heptane),
               Kinetics of this process is studied and the conditions

Card 1/2                          - 222 -

KUSAKOV, M.M., prof., otvetstvennyy redaktor; PLATE, A.F., prof., otvetstvennyy
redaktor; NIKOLAYEVA, V.G., kand.tekhn.nauk, otvetstvennyy redaktor;
TOPCHIYEV, A.V., akademik, redaktor; KAZANSKIY, B.A., akademik,
redaktor; SERGIYENKO, S.R., prof., redaktor; NEKRASOV, A.S., redaktor
izdatel'stva; LOKTEV, S.M., redaktor izdatel'stva; NOVICHKOVA, N.D.,
tekhnicheskiy redaktor.

[Composition and properties of petroleums and gasoline-kerosene
fractions; a collection of papers on the study of the composition
of petroleums and petroleum products] Sostav i svoistva neftei i
benzino-kerosinovykh fraktsii; sbornik rabot po izucheniiu sostava
i svoistv neftei i nefteproduktov. Moskva, Izd-vo Akad.nauk SSSR,
1957. 518 p.                                      (MIRA 10:11)

1. Akademiya nauk SSSR.   Institut nefti.
                          (Petroleum)

KUSAKOV, M.M.

PRIKHOT'KO, A F

24(7)      p )      PHASE I BOOK EXPLOITATION      SOV/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1:
Molekulyarnaya spektroskopiya (Papers of the 10th All-Union
Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy)
[L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies
printed. (Series: Its: Fizychnyy zbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po
spektroskopii. Ed.: Gazer, S.L.; Tech. Ed.: Saranyuk, T.V.;
Editorial Board: Landsberg, G.S., Academician (Resp. Ed., Deceased),
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Fabrikant, V.A., Doctor of Physical and Mathematical Sciences,
Kornitskiy, V.G., Candidate of Technical Sciences,
Candidate of Physical and Mathematical Sciences, Rayskiy, S.M.,
Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K.,
Candidate of Physical and Mathematical Sciences, Miliyanchuk, V.S.,
A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

Gordadze, G.S.  Anharmonicity of the Potential
Curve of a Hydrogen Molecule                                      317

Kusakov, M.M., S.S. Nifontova, Ye. S. Pokrovskaya, et al.
Study of the Structural-group Composition of
Kerosene Fractions by Means of the Absorption Spectra
in the Near Ultraviolet Region                                   321

Iogansen, A.V.  Structural-group Analysis of Saturated
Petroleum Products by Means of Infrared Absorption
Spectra.  Determination of $CH_3$-groups, Aliphatic
$CH_2$-groups and Long Chains, $(CH_2)_n$                        327

Gal'pern, G.D., A.N. Kialinskiy, I.A. Musayev, et al.
Study of the Composition of Benzine-ligroin Fractions
by Means of Combined Dispersion Spectra                          329

Gal'pern, G.D., M.M. Kusakov, Ye. S. Pokrovskaya, et al.
Study of the Absorption Spectra of Some Petroleum
Aromatic Hydrocarbons in the Near Ultraviolet and Infra-
red Regions                                                      334

Card 21/30

KUSAKOV, M.M.; NIFONTOVA, S.S.; POKROVSKAYA, Ye.S.; ROZENBERG, L.M.; TOPCHIYEV, A.V.; SHISHKINA, M.V.

Absorption spectrum study in the near ultraviolet region of the structure and group composition of the kerosene fraction. Fiz. sbor. no.3:321-326 '57.                                          (MIRA 11:8)

1. Institut nefti AN SSSR.
                           (Kerosene—Spectra)

KUSAKOV, M.M.; NIFONTOVA, S.S.; POKROVSKAYA, Ye.S.; ROZENBERG, L.M.;
TOPCHIYEV, A.V.; SHISHKINA, M.V.

Absorption spectrum study in the near ultraviolet region of the
structure and group composition of the kerosene fraction. Piz.
sbor. no.3:321-326 '57.                              (MIRA 11:8)

1. Institut nefti AN SSSR.
                    (Kerosene—Spectra)

AUTHOR:  Kusakov, M.M., Konovalova L.A. and Avdeyeva, V.I.
65-4-6/12

TITLE:   The influence of pressure on the viscosity of solutions of
         some silicon-organic liquids in a mineral oil. (Vliyaniye
         davleniya na vyazkost' rastvorov nekotorykh kremniyorgani-
         kikh zhidkostey v mineral'nom masle.)

ABSTRACT: The dependence of the viscosity of some solutions of poly-
         siloxanes in a mineral oil on pressure at various temperatures
         was investigated. The viscosity measurements at pressures up
         to 3 000 $kg/cm^2$ and temperatures from 10 to 50 $^{\circ}$C were carried
         out in a high pressure viscosimeter based on the principle of
         falling sphere (14,6). The dependence of the relative viscos-
         ity of oil AY, ethylpolysiloxane liquid and their mixtures on
         pressure is shown in Fig. 1., isobars of the concentration –
         relative viscosity relationship, in Figs. 2–4. The influence
         of some individual liquids with siloxane links (bis-pentaalkyl-
         disilanemethaneoxides with various radicals, from $CH_3$ to $C_4H_9$ )
         on the viscosity of oil AY under the same pressures and temper-
         atures was studied in some detail. Comparatively small concen-
         trations (up to 0.5 mol/1 000) of the above compounds dissolved
         in AY oil decrease the relative

Card 1/2

The influence of pressure on the viscosity of solutions of some silicon-organic liquids in a mineral oil. (Cont.)  65-4-6/12

viscosity $\frac{\eta_p}{\eta_0}$ of solutions below that of oil AY. The effect of their action increases with increasing pressure. Of the compounds tested those with butyl and ethyl radicals are more effective than those with methyl and propyl radicals. There are 4 figures and 8 references, including 5 Slavic.

ASSOCIATION:  Petroleum Institute, Ac.Sc., U.S.S.R.
              (Institut Nefti AN SSSR)

AVAILABLE:

 Card 2/2

Kvsckov M M

Effect of pressure and temperature on the wetting of the surface of quartz by petroleum and water. N. N. Lazov and M. M. Kusakov. Izvest. Akad. Nauk S S.S.R. 1957. No. 4, 47-69(in Russian). The expts. were made in a special app. at 20-50° and from 1 to 250 kg. per sq. cm. pressure. The contact angle θ at the interface between quartz and petroleum, a soln. of petroleum, a mixt. of distd. $H_2O$, sea $H_2O$, and $H_2O$ satd. with N and $CH_4$ that occurs below layers of petroleum were measured.
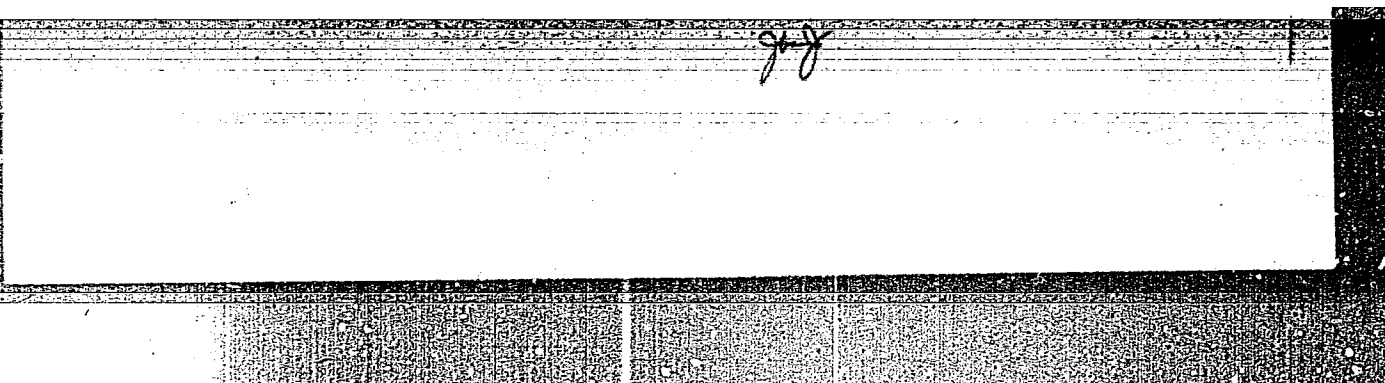
*KUSAKOV M. M.*

TOPCHIYEV, A.V.; KUSAKOV, M.M.; NIFONTOVA, S.S.; SUCHKOVA, A.A.; SHISHKINA,
M.V.

Investigating condensed aromatic hydrocarbons from the kerosene
fraction of Romashkino oil. Khim. i tekh. topl. i masel no.9:1-7
S '57.                                                (MIRA 10:11)

1. Institut nefti AN SSSR.
         (Chkalov Province--Petroleum)     (Hydrocarbons--Analysis)

MEKENITSKAYA, L.I.; KUSAKOV, M.M.

The state of bound water in an oil collecting stratum. Neft. khoz.
35 no.9:41-44 S '57.                                        (MIRA 11:1)
                        (Water, Underground)

20-5-25/54

AUTHOR:      Kusakov, M. M. and  Mekenitskaya, L. I.

TITLE:       The Film and Capillary-Held Water in a Porous Medium
             (Plenochnaya i kapillyarno - uderzhannaya voda v poristoy srede)

ABSTRACT:    In 4 previous works by the same authors the thickness of the poly-
             molecular layers of electrolytic water solutions on the inner
             surface of a single capillary at various dividing boundaries was
             studied. These properties were studied in mineral gas- and miner-
             al oil containing layers on samples of quartz sandstone of the
             Tuymaz oilfield in order to find out to what extent the con-
             clusion concerning thin layers in single capillaries hold for
             porous milieus and/ or can serve for the characterization of the
             state of bound water in mineral gas and mineral oil containing
             zones of a mineral oil collector. It was proved on this occasion
             that the method of water displacement from the cores though a
             little permeable dividing wall can be used for this characteri-
Card 1/4     zation. If distilled water is used as rest water, it is in the

The Film and Capillary-Held Water in a Porous Medium     20-5-25/54

cores not only in a  capillarily-held, but in a film state, for
distilled water can exist on glass and on quartz on the boundary
with gas in form of balanced, moistening, thin layers. Fig. 1
shows the results of investigations of NaCl concentration with
respect to the remaining water saturation (expressed in % of the
pore volume), for 3 cores of different permeability. From the
diagram (fig. 1) it may be seen that with the increase of Na_Cl
concentration the quantity of the liquid remaining in the core
decreases. Figure 2 shows curves which express the dependence
of the remaining water saturation for distilled water and for 5
N-NaCl solution on the permeability of the core. Herefrom it may
be seen that with a permeability of a porous milieu of 800 - 100
mda and more the quantity of the rer\ining liquid is independent
of the permeability. From table 1 it may be seen that the quanti-
ty of capillarily held liquid in the porous medium is practically
independent of the nature of the electrolyte. The average film
thickness of the distilled water "h" can be estimated from the
difference between the total quantity in the cores of the capil-
larily held liquids and the size of the specific core surface.
Figure 3 shows the dependence of the average water film thickness
(distilled) in the porous medium on the value $\sigma/r$, which is

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20-5-25/54

The Film and Capillary-Held Water in a Porous Medium

proportional to the expansive pressure of a cylindrical fine layer. This shows that also in this milieu the average layer thickness, conditions otherwise being equal, is determined by their expansive pressure. The remaining saturation is, in the case of trivalent salt solutions (AlCl$_3$) and relatively low concentrations for their same values, lower than in the case of univalent ones (NaCl). Apparently the thickness of the layers in AlCl$_3$ solutions is less than that in NaCl solutions. At high concentrations practically no difference was observed in this respect, which might be explained by a complete destruction of the layers of moisturing at high concentrations. The above results mention the fact that the properties of fine layers such as were studied at the single capillaries on the boundary air / aqueous electrolyte solution / glass or / quartz, are fully conserved also in porous media. Consequently, the previously drawn conclusion is correct, i.e. that the state of bound water, particularly is gas, containing collectors, which represents electrolyte solutions, is determined by the physical-chemical properties of the liquid. There are 3 figures, 1 table, and 11 Slavic references.

Card 3/4

20-5-25/54

The Film and Capillary-Held Water in a Porous Medium

ASSOCIATION:    Moscow Petroleum    Institute imeni   I.M. Gubkin
(Moskovskiy neftyanoy institut im. I.M. Gubkina)

PRESENTED BY:   A.V. Topchiyev, Academician , February 13, 1957

SUBMITTED:      February 11, 1957

AVAILABLE:      Library of Congress

Card 4/4

KUSAKOV, M.M.

AUTHORS:     Kusakov, M. M.,   Petrov, A. A.          20-4-30/51

TITLE:       Note on the Rheologic Properties of Surface Layers at
             the Oil-Water Interface and Their Rôle in the Stability
             of Oil Emulsions (Reologicheskiye svoystva poverkhnostnykh
             sloyev na granitse razdela neft'-voda i ikh rol'
             v ustoychivosti neftyanykh emul'siy).

ABSTRACT:    The authors employed an apparatus of the type of a torsion
             pendulum for the purpose of studying these rheologic
             properties. According to the composition of the hydron-
             carbon phase and of the water phase, of the time of
             formation of the layer and its temperature three types of
             motion of the torsion pendulum can be distinguished.
             a) Damped oscillations,  b) An aperiodic motion,  c) an
             elastic-visceous motion. The most exhaustive data on the
             character of the rheologic properties of the surface layers
             can be obtained from the observation of the elastic-
             visceous motion of the torsion pendulum. A diagram illustrates
             the typical curves of the temporal development of the
Card 1/3     deformation of the surface layers at the interface between

Note on the Rheologic Properties of Surface Layers at the    20-4-30/51
Oil-Water Interface and Their Rôle in the Stability of Oil
Emulsions

petroleum and water at a varying torsion moment. The
deformation of these surface layers develops in a way
analoguous to the deformation in the adsorption layers of
saponine. Such types pf curves of deformation over time can
be caused by three types of deformations, instantaneous
elastic deformations, deformation caused by elastic after-
effects and an irreversible deformation of flow. Then the
quantities characterizing the rheologic quantities are
enumerated. For the purpose of investigating the influence
of the nature of the petroleum on the properties of the
surface layers, the rheologic properties of the surface
layers on the interface were examined with a 15 % solution
of NaCl (pH 6,3 -7,0) with different kinds of petroleum
from Eastern wells oil. The results obtained from these
investigations are compiled in a table. The surface layers
of the various oil types at the interface between oil and
water possess high elastic and visceous properties: the
surface viscosity reaches values of the order of magnitude
Card 2/3      of $10^4$ surface Poise. The occurrance of a maximum strength

Note on the Rheologic Properties of Surface Layers at the     20-4- 30/51
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in the surface layers at the boundary of the water in the
range of diluted oil solutions is apparently connected with
a more intensive formation of gel by the substances of an
asphalteous and resinous type in the surface layers. The
investigation of the influence of the composition of the
oil phase and the water phase, of temperature, of the time
of formation of the layer and of other factors on the
rheologic properties of the surface layers makes it possible
to select suitable methods for the dehydration and de-
saltification of the petroleum and the characterization
of the parameters of the petroleum and an evaluation of the
efficiency of the demulgators.
There are 3 figures, 1 table. and 10 Slavic references

ASSOCIATION: Petroleum Institute . AN USSR (Institut nefti Akademii nauk SSSR)

PRESENTED:    April 15, 1957, by A. V. Topchiyev, Academician

SUBMITTED:    February 28, 1957

AVAILABLE:    Library of Congress
Card  3/3

KUSAKOV, M.M.

S(3); 11(6)

Akademiya nauk SSSR. Institut nefti

Trudy, t. 12 (Transactions of the Petroleum Institute, USSR, Academy of Sciences, Vol 12) Moscow, Izd-vo AN SSSR, 1958. 395 p. Errata slip inserted. 1,700 copies printed.

Ed.: B.I. Sergiyenko, Professor; Ed. of Publishing House: K.G. Myasnikov; Tech. Ed.: V.V. Volkova.

PURPOSE: The book is intended for scientists, engineers, and technicians in the petroleum industry.

COVERAGE: This collection of articles describes the results of studies on the chemistry and technology of petroleum and gas conducted in the laboratories of the Petroleum Institute, Academy of Sciences, USSR, in 1956 and 1957. A new section "Petrochemical Synthesis and Technology of Petroleum" has been included in the collection of articles. A list of investigations published by the members of the Institute in 1956 and 1957 and a list of dissertations for the Doctor's and Candidate's degree presented in 1956 and 1957 at open sessions of the Academic Council of the Petroleum Institute, Academy of Sciences, USSR, are given.

Kusakov, M. M.

PHASE I BOOK EXPLOITATION    SOV/2221

Akademiya nauk SSSR. Institut nefti

Trudy, t. 12 (Transactions of the Petroleum Institute, USSR. Academy of Sciences, Vol 12) Moscow, Izd-vo AN SSSR, 1958, 395 p. Errata slip inserted. 1,700 copies printed.

Ed.: S. R. Sergiyenko, Professor; Ed. of Pub. House: Kramer, L. G. Mirzadzhanov; Tech. Ed.: V. V. Golubev.

PURPOSE: The book is intended for scientists, engineers, and technicians in the petroleum industry.

COVERAGE: This collection of articles describes the results of studies at the chemistry and technology of petroleum and gas conducted in the laboratories of the Petroleum Institute, Academy of Sciences, USSR, in 1956 and 1957. A new section "Petrochemical Synthesis and Technology of Petroleum" has been included in the collection of articles. A list of investigations published by the Associates of the Institute in 1956 and 1957 and a list of dissertations for the Doctor's and Candidate's degrees presented in 1956 and 1957 at open sessions of the Academic Council of the Petroleum Institute, Academy of Sciences, USSR, are given.

L. D. Iskhakov, P. V. Korneyenkov, I. A. Musayev, and V. I. Shchekin. Change in the Activity of Silica Gel in the Chromatographic Separation of Hydrocarbons

V. ARTICLES ON VARIOUS PROBLEMS

Dunskiy, M. M., I. A. Kononalov, and I. I. Andreyev. Effect of Pressure on Viscosity and Structure Formation of Lubricating Oils

Levror, V. A., and B. A. Buhalio. The Role of Nitronites in Self-Ignition of a Mixture of Dicyclopentadiene and Nitric Acid. Report I

Serisor, P. A., V. M. Andrianov. Some Problems in the Economics of Petroleum Refining

Sahovsky, I. K. (Deceased)

Dissertations presented at sessions of the Academic Council of the Petroleum Institute, Academy of Sciences, USSR, in 1956 and 1957

Investigations on the chemistry and technology of petroleum and gas carried out at the Petroleum Institute, Academy of Sciences, USSR, and published in 1956-1957

Papers not included in the bibliography of Vol. X of Trudy Instituta nefti

AVAILABLE: Library of Congress

Kusakov, M. M.

Sponsoring Agencies: USSR. Glavnoye upravleniye po ispol'zovaniyu atomnoy energii, and Akademiya nauk SSSR.

Editorial Board of Set: V.I. Dikushin, Academician (Resp. Ed.), N.M. Shumilovskiy (Deputy Resp. Ed.), Yu. S. Zalevskiy (Deputy Resp. Ed.), L.L. Tatochenko, B.I. Verkhovskiy, S.T. Nazarov, L.I. Petrenko, and N.G. Zelevinskaya (Secretary).

Ed. of Publishing House: P.M. Belyanin; Tech. Ed.: T.F. Polenova.

PURPOSE: This book is intended for specialists in the field of machine and instrument manufacture who use radioactive isotopes in the study of materials and processes.

COVERAGE: This collection of papers covers a very wide field of the utilization of tracer methods in industrial research and control techniques. The topic of this volume is the use of radioisotopes in the machine- and instrument-manufacturing industry. The individual papers discuss the application of radioisotope techniques in the study of metals and alloys, problems of friction and lubrication, metal cutting, engine performance, and defects in metals. Several papers are devoted to the use of radioisotopes in the automation of industrial processes, recording and measuring devices, quality control, flowmeters, level gauges, safety devices, radiation counters, etc. These papers represent contributions of various Soviet institutes and laboratories. They were published in Transactions of the All-Union Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and Science, April 4-12, 1957. No personalities are mentioned. References are given at the end of most of the papers.

Nikitin, M.D. (Tsentral'nyy nauchno-issledovatel'skiy dizel'nyy institut - Diesel Research Institute). Effect of the Number of Revolutions and Maximum Cycle Pressure on the Wear of Upper Piston Ring and Cylinder Sleeve in Diesels    43

Nisnevich,A.I. (Nauchno-issledovatel'skiy traktornyy institut - Tractor Research Institute). Study of the Effect of Dust on the Wear of Parts of Tractor Engines    47

Zaslavskiy, Yu.S., O.I. Shor, and I.A. Morozova (VNII po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva - All-Union Scientific Research Institute for the Processing of Petroleum and Gas and the Production of Synthetic Liquid Fuel). Reduction of the Low-temperature Wear of Cylinder-Piston Units in Engines by the Use of Oil Additives    52

Zaslavskiy, Yu.S., I.A. Morozova and O.I. Shor (VNII po pererabotke nefti i gaza i polucheniyu iskusstvennogo zhidkogo topliva - All-Union Scientific Research Institute for the Processing of Petroleum and Gas and the Production of Synthetic Liquid Fuel). Study of the Mechanism of the Action of Anticorrosive Oil Additives    64

Postma, M.M., O.V. Vinogradov, L.A. Razumovskaya, P.I. Sanin, and A.V. Ul'yanova (Institut nefti AN SSSR - Petroleum Institute, Academy of Sciences, USSR). Study of the Mechanism of the Interaction of Oil Additives with Metals    67

Budnits, Ya.Ya. (Vsesoyuznyy nauchno-issledovatel'skiy ugol'nyy institut - All-Union Mining Research Institute). Study of the Wear of Gears in Mining Machinery    73

SERGIYENKO, S.R., prof., otvetstvennyy red.; TOPCHIYEV, A.V., akademik,
    red.; KAZANSKIY, B.A., akademik, red.; FEDOROV, V.S., kand.tekhn.nauk,
    red.; KUSAKOV, M.M., prof., red.; PLATE, A.F., prof., red.;
    NIKOLAYEVA, V.G., kand.tekhn.nauk, red.; NEKRASOV, A.S., red.
    izd-va; PAVLOVSKIY, A.A., tekhn.red.

[Composition and properties of the high-molecular part of petroleum;
a collection of papers on the composition and properties of petroleums
and petroleum products] Sostav i svoistva vysokomolekuliarnoi chasti
nefti; sbornik rabot po izucheniiu sostava i svoistv neftei i nefte-
produktov. Moskva, Izd-vo Akad. nauk SSSR, 1958. 369 p. (MIRA 11:4)

1. Akademiya nauk SSSR.  Institut nefti.
        (Petroleum—Analysis)

KUSAKOV, M. M.

with A. Yu. Koshevnik and N. M. Lubman "Study of the Effect of Pressure on the Selective Saturation of Quartz Rocks With Water or Crude Oil" ,

with N. M. Lubman and A. A. Kocheshkov "Influence of Pressure on the Speed Rate of Capillary Saturation of Porous Formations"

Transactions of the Petroleum Institute, Acad. Sci. USSR, v. 11, Oil Field Industry, Moscow, Izd-vo AN SSSR, 1958. 346pp.

LEBEDEV, V.V.; KUSAKOV, M.M.

Capillary hysteresis following the rise of a viscous liquid in
ascending conical capillaries. Izv. vys. ucheb.zav.; fiz. no.1:
15-28 '58.                                                    (MIRA 11:6)

1.Moskovskiy neftyanoy institut imeni akad. I.M. Gubkina.
                    (Capillarity)

MEKENITSKAYA, L.I.; KUSAKOV, M.M.

Molecular characteristics of oil-sand surfaces. Izv.vys.ucheb.zav.;
neft' i gaz 1 no.9:53-60  ' 58.                    (MIRA 11:12)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti
imeni akademika I.M. Gubkina.
                        (Oil sands)

KUSAKOV, M. M

65-58-4-10/12

AUTHORS:     Kusakov, M. M., Landau, M. A., Lubman, N. M., and
             Shchdsko, M. I.

TITLE:       Calcium Hydride Method for Determining the Content of
             the Water in Fuel When Taking into Account the Kinetics
             of Evolution of Hydrogen    (Gidridkal'tsiyevyy metod
             opredeleniya soderzhaniya vody v toplive s uchetom
             kinetiki vydeleniya vodoroda)

PERIODICAL:  Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr 4,
             pp 55 - 61 (USSR)

ABSTRACT:    The solubility of water in hydrocarbon liquids, and, partly in
             fuels and oils depends in a varying degree on their
             chemical composition and on the temperature (Refs.1
             and 2); the liquids are very hygroscopic.  The calcium
             hydride method is one of the most important amongst
             the physical and chemical methods of determining the
             water content in hydrocarbon liquids (Refs. 3 - 8).
             It is based on measuring the volume (V method) or the
             pressure (P method of hydrogen, separated during the
             reaction of calcium hydride and water.  Formulae are
             derived for calculating the water content according to
             both methods (formulae 2 and 7).  When excess calcium
             hydride is reacted with water a second order reaction
             takes place.  A graphical method for the determination
Card 1/2     of the volume or pressure of hydrogen is also given.

65-58-4-10/12

Calcium Hydride Method for Determining the Content of the Water in
Fuel When Taking into Account the Kinetics of Evolution of Hydrogen

A second variation of the P method makes it possible
to determine the content of water in hydrogen liquids
with an accuracy of about 6%. This method is recom-
ded for Research Institutes for determining the waters
dispersed in the form of very fine drops. When calcu-
lating the evolution of hydrogen according to the V
method it is possible to shorten the time of the experi-
ment, and to increase the accuracy of measurements to
about 3% - 5%. Formulae for calculating the reaction ki-
netics of the interaction of calcium hydride in water
are given (formulae 8 - 10). Experiments were carried
out with synthetic mixtures of the fuel T-1 and petrol
B-70 with water in reaction pumps (Fig.1). Table 1 and 2
shows results of experiments according to the V method
and P method respectively. There are 4 Figures, 2
Tables, and 10 References: 6 Russian, 2 English and 2
German.

ASSOCIATION: Petroleum Institute AS USSR  (Institut nefti AN SSSR)

Card 2/2    1. Water-Determination    2. Calcium hydride-Applications
            3. Fuels-Impurities

AUTHORS:     Kusakov, M. M., Mekenitskaya, L. I.      SOV/156-58-4-11/49

TITLE:       Method of Determining the Ratio Between Hydrophobic and
             Hydrophilic Surface on Uncemented Porous Mass (Metod
             opredeleniya sootnosheniya gidrofobnoy i gidrofil'noy
             poverkhnostey nestsementirovannykh poristykh sred)

PERIODICAL:  Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya
             tekhnologiya, 1958, Nr 4, pp 656-659 (USSR)

ABSTRACT:    A method of characterizing the ratio between the hydrophilic
             and hydrophobic surface of the porous mass was suggested for
             determining oil-containing sand. The ratio between hydro-
             phobic surface $S_{hydrophobic}$ and $S_{hydrophilic}$ is determined
             by the magnitude $\gamma$, which is the characteristic feature of the
             molecular surface of oil-containing sand:

$$\gamma = \frac{S_{hydrophobic}}{S_{hydrophilic}} = \frac{S_{hydrophobic}}{S - S_{hydrophobic}}$$

             $S = S_{hydrophobic} + S_{hydrophilic}$ is the total surface of the

Card 1/2       solid phase. The ratio $\gamma$ of oil-containing sand was determined

SOV/156-58-4-11/49

Method of Determining the Ratio Between Hydrophobic and Hydrophilic Surface
on Uncemented Porous Mass

by the adsorption method. The method of determining the
magnitude $r$ is described in detail. Mersolate was used as an
adsorbing agent. Experiments with synthetic sand mixtures
containing different hydrophobic and hydrophilic quantities
were carried out to check this method experimentally. A
calibration curve was plotted. The determination of the ratio
$S_{hydrophobic} : S_{hydrophilic}$ was compared to the determinations
of synthetically produced sand. Satisfactory results were
obtained.
There are 3 figures and 7 references, 5 of which are Soviet.

ASSOCIATION:   Kafedra fiziki Moskovskogo neftyanogo instituta im. akad.
I. M. Gubkina (Chair of Physics at the Moscow Institute of
Petroleum imeni Academician I. M. Gubkin)

SUBMITTED:    March 26, 1958

Card 2/2

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SOV/58-59-7-16560

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 7, p 271 (USSR)

AUTHORS:     Gal'perin, G.D., Kusakov, M.M., Pokrovskaya, Ye.S., Shimanko, N.A.

TITLE:       Study of the Absorption Spectra of Some Cyclohexyl and Cyclopentyl Derivatives of Benzene in the Near Ultraviolet Region

PERIODICAL:  Tr. In-ta nefti. AS USSR, 1958, Vol 12, pp 38 - 64

ABSTRACT:    The authors studied the absorption spectra of a number of cyclohexyl and cyclopentyl derivatives of benzene and its methylated homologs in a solution of isooctane in the 2,200 to 2,900 Å region. They demonstrated the possibility of determining the position of alycyclic substitutes in the benzene ring. In some cases it is possible to identify isomers of identical structure with cyclohexyl, cyclopentyl, methyl, or both methyl and cyclic substitutes. The advantages of the described method of studying structure, as compared with the chemical method, are its simplicity, the possibility of carrying out measurements in the liquid phase and at room temperature, and the small size of the sample required for analysis (hundredths of a gram).

                                                    L. Dmitrenko

Card 1/1

KUSAKOV, M.M.; KONOVALOVA, L.A.; AVDEYEVA, V.I.

Effect of the pressure on the viscosity and structure of lubricating
oils. Trudy Inst.nefti 12:339-353 '58.                    (MIRA 12:3)
                (Lubrication and lubricants)

KOSHELEVA, I.M.; KUSAKOV, M.M.

Displacement of mutually soluble liquid hydrocarbons in porous
media. Trudy MHI no.22:158-169 '58.                (MIRA 12:4)
(Oil reservoir engineering)

KUSAKOV, M.M.; KOSHELEVA, I.M.

Effect of capillary forces on water flooding of liquid hydro-
carbons from hydrophilic porous media. Trudy MNI no.22:170-180
'58.                                                    (MIRA 12:4)
                    (Oil field flooding)

KUSAKOV, M.M.; KOSHELEVA, I.M.

Flooding oil from hydrophobic porous media with water. Trudy MNI
no.22:181-197 '58.                                    (MIRA 12:4)
                    (Oil field flooding)

KUSAKOV, M.M.; GIMATUDINOV, Sh.K.

Capillary displacement of oil with water in natural cores.
Trudy MNI no.22:198-206 '58.          (MIRA 12:4)
              (Oil field flooding)

GIMATUDINOV, Sh.K.; KUSAKOV, M.M.

Effect of rate of water flooding of oil from natural cores on oil
recovery. Trudy MNI no.22:207-216 '58.                    (MIRA 12:4)
                        (Oil field flooding)

KOCHESKOV, A.A.; KUSAKOV, M.M.; LUBMAN, N.M.

Mechanism of the capillary percolation and propulsion in
porous media. Izv.vys.ucheb.zav.; neft' i gaz 1 no.11:
59-64 '58.                                      (MIRA 12:5)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlenno-
sti im. akad.I.M.Gubkina.
                    (Capillarity)

KOCHESHKOV, A.A.; KUSAKOV, M.M.; LUBMAN, N.M.

Effect of pressure on the speed of capillary percolation of
polar liquids in porous media.  Izv.vys.ucheb.zav.; neft' i
gaz  1  no.12:69-76  '58.                           (MIRA 12:4)

1. Moskovskiy institut neftekhimicheskoy i gazovoy promyshlen-
nosti im. akad.I.M.Gubkina.
                    (Capillarity)

SOV/74-27-10-1/4

AUTHORS: Topchiyev, A. V., Kazanskiy, B. A., Musayev, I. A., Gal'pern, G. D., Kusakov, M. M., Plate, A. F. (Moscow)

TITLE: Investigation of the Composition of the Light Fractions of Soviet Crudes (Issledovaniye sostava legkikh fraktsiy sovetskikn neitey)

PERIODICAL: Uspekhi khimii, 1958, Vol 27, Nr 10, pp 1177-1197 (USSR)

ABSTRACT: This paper gives a chronological report on the fundamental publications on the investigation of the composition of the light fractions of the Soviet mineral oils which have hitherto been made. In this connection special attention is payed to those publications which are edited by N. D. Zelinskiy, his collaborators and students (Refs 1-50). As may be seen from the present paper the current investigations of the mineral oil fractions until the years 1937, 1939 were carried out mainly in connection with a chemical characterization of the light benzoin and benzene ligroin fractions of mineral oil. Only in the 1940's methods were elaborated for the intensification of the individual investigation of the light fractions of the Soviet mineral oils.

Card 1/3    At the beginning of this paper reports are made on the first

SOV/74-27-10-1/4

Investigation of the Composition of the Light Fractions of ; ; Soviet
Crudes

work carried out in 1881-83 (Bel'shteyn and Kurbatov). The
diverse research institutes of mineralogy which have been
established are chronologically mentioned (e. g.: 1924: the first
central (Gosudarstvennyy Issledovatel'skiy neftyancy Institut)
State Research Institute of **Petroleum** in Moscow); 1934: In-
stitut goryuchikh iskopayemykh AN SSSR (Institute of Combustible
Minerals AS USSR), diverse chemo-technical laboratories of the
GINI (State Research Institute of **Petroleum**) as well as diverse
research institutes in the Republics of the **Union:** Azerbaydzhanskaya
SSR, **Uzbekskaya** SSR, **Turkmenskaya** SSR, and others. After World
War II methods of group analysis on a higher level were
elaborated for the investigation of the petroleum naphtha
fractions (with a further differentiation of the hydrocarbon sub-
groups). It was necessary to investigate in detail the composition
of the hydrocarbons of the light mineral oil fractions because
of the rapid development of air plane and automobile motor
construction in the USSR. Due to this fact the demands concerning
the quality of the motor fuel as well as of the crude oil changed
Especially in 1955 intensive investigations of the individual
composition of the hydrocarbons of gasoline produced by cracking
Card 2/3    were carried out by using the chromatographic distribution of

Investigation of the Composition of the Light Fractions of
Soviet Crudes

SOV/74-27-10-1/4

adsorption, the catalytic analytic hydrogenation and dehydro-
genation as well as spectrum analysis by means of combined
dispersion of light (Refs 108-160). In conclusion the authors
are of the opinion that mere geological and geochemical factors
are not sufficient for the production of experimentally founded
theories on the formation and the change of **petroleum** under
the conditions of migration. A great number of important data
are necessary for the solution of the problem of the formation
of **petroleum,** namely the nature, the concentration and the
composition of the hydrocarbon components (or the non-hydro-
carbon components); i. e., of the organosulfuric, nitrogen and
oxygen compounds which belong to the composition of **petrole-
um.** There are 160 references, 160 of which are Soviet.

Card 3/3

KUSAKOV, M.M.; GUDOK, N.S.

Effect of external pressure on filtration properties of oil-
bearing rocks. Neft. khoz. 36 no.6:40-47 Je '58.     (MIRA 11:9)
(Rocks--Permeability)

20-119-1-29/52

AUTHORS:      Kusakov, M. M.,   Nekrasov, D. N.

TITLE:        The Rise of a Liquid in Capillaries of Variable Cross Section
              and    Capillary Hysteresis (Pod"yem zhidkosti v kapillyarakh
              peremennogo secheniya i kapillyarnyy gisterezis)

PERIODICAL:   Doklady Akademii Nauk SSSR, 1958, Vol.119, Nr 1, pp.107-109 (USSR)

ABSTRACT:     For capillary tubes with circular cross section the height h
              of the capillary rise of a nonviscous liquid can be deter-
              mined from the condition $\partial U/\partial h$. Here

$$U = \pi\rho\, g \int_0^h r^2 h\, dh - 2\pi\sigma \int_0^h r\, dh \quad \text{denotes the potential energy}$$

              of the wetting liquid in the tube: $\rho$ denotes the density of
              the liquid, g - gravitation, r - the radius of the capillaries
              and $\sigma$ - the surface tension of the liquid at its boundary
              against the supersaturated vapor. The expression for U given
              here holds on the premise that the meniscus is spherical
              and that the liquid wets the walls of the capillaries. In
              the same expression the function $r = f(h)$ determines  the
              (rotation-symmetrical with regard to the axis of the capil-

Card 1/3

The Rise of a Liquid in Capillaries of Variable Cross Section and      Ca-
pillary Hysteresis

laries) form of the capillaries. The heights of the capillary
rise in a capillary with variable cross section can also be
determined by a simultaneous solution of the equation system
$h \rho g = 2\sigma/r$ and $r = f(h)$. For a capillary, the form of which
is determined by the equation $r = 2\sigma/h \rho g$, there is an equi-
librium for every height of the liquid. In this case the inte-
rior surface of the capillary is formed by rotation of a
hyperbola around the vertical axis of the capillary. Thus the
nonreproducibility observed in some liquids is connected with
the heights of the capillary rise. In many cases the ca-
pillaries in fact have a variable cross section. The conside-
rations here discussed were checked by means of the capil-
lary rise of water in conic capillaries becoming narrower
and also in glass capillaries with sinosoidal periodically
variable cross section, which were produced for this pur-
pose. For a sinosoidal capillary here the curves $U = f(h)$,
$h \rho g = f(h)$ and $2\sigma/r = f(h)$ are given. Finally numerical
data for a concrete example are given. The final conclusion
of the existence of several heights of the capillary rise
in capillaries with variable cross section (this phenomenon

Card 2/3      is known under the name of capillary hysteresis) can be  ob-

20-119-1-29/52

The Rise of a Liquid in Capillaries of Variable Cross Section and      Ca-
pillary Hysteresis

        tained by investigation of the general conditions for the
        equilibrium of the liquid in the capillaries. There are
        1 figure and 2 references, 1 of which is Soviet.

PRESENTED:    August 8, 1957, by A. V. Topchiyev, Member, Academy of Sciences,
           USSR

SUBMITTED:    July 29, 1957

Card 3/3

AUTHORS:        Gudok, N. S., Kusakov, M. M.                    20-119-2-9/60

TITLE:          Experimental Investigation of the Influence
                Exerted by the External Pressure on the Permeability
                of Oil-Bearing Rocks (Eksperimental'noye issledovaniye
                vliyaniya vneshnego davleniya na pronitsayemost'
                neftesoderzhashchikh porod)

ABSTRACT:       In connection with the problem of unsteady filtration and
                the reconstitution of the pressure in oil-bearing layers,
                the experimental investigation of the character of
                deformation of the oil-bearing layers on the influence
                of the external pressure $P_{ext.}$ of the rocks placed on
                them is of interest. The investigation of the influence
                of the external pressure on the velocity of filtration
                of the liquid in oil-bearing rocks (according to the
                volume) makes it possible to judge the character of the
                change of the permeability of these rocks in their
Card 1/4

Experimental Investigation of the Influence          20-119-2-9/60
Exerted by the External Pressure on the Permeability of
Oil-Bearing Rocks

loading and unloading. The filtration was investigated in
the samples of natural oil-bearing rocks (from the    $\mathcal{A}$
Bashkiric and Caucasian oil deposits). The external
pressure was exerted by hydraulic compression of the
lateral surface of the sample through a thin lead
casing, and it amounted up to 600 atmospheres excess
pressure. The permeability K was measured by means of
the UIPK-1-apparatus and the drop of pressure in the rock
sample was determined for a given filtration velocity.
Nonpolar kerosene served as filtering liquid. The authors
determined the curves $K = f(P_{ext.})$ in the case of increased
and decreased external pressure with constant rock
pressure. The measurements at the rock samples of different
permeability showed the following: In all cases without
exception the linear rule of filtration is valid on the
basis of which the permeability K at different $P_{ext.}$
was calculated. From the results obtained 2 main types

Card 2/4          of curves result $K = f(P_{ext.})$. To the first type belong

Experimental Investigation of the Influence                20-119-2-9/60
Exerted by the External Pressure on the Permeability of
Oil-Bearing Rocks

the curves which characterize the locking of
remanent deformations in the samples in the case of
decreasing or increasing the external pressure. The
curves of the second type, however, characterize the
presence of a remanent deformation in the case of
a change of pressure. The character of the change of
permeability in a repeated cycle depends on the fact if
the sample at the end of the inverse course of the first
cycle was completely unloaded or if the repeated cycle
began at such a pressure at which the external cycle
was finished. The character of the deformation of
different rocks (sandstones, limestones, aleurolithes,
dolomites etc.) is different and depends on their
mineral composition, on the structure and on the
composition of the cementing substance. According to the
results obtained here remanent deformations exist in
oil-bearing rocks which can be explained by the occurrence
Card 3/4          of plastic properties in the presence of external pressures.

Experimental Investigation  of the Influence          20-119-2-9/60
Exerted by the External Pressure on the Permeability of
Oil-Bearing Rocks

> In most cases these plastic properties of the rocks
> are connected with their structure and with the
> plasticity of the cementing substance. There are 1
> figure and 7 references, 2 of which are Soviet.

PRESENTED:    September 23, 1957, by S. A. Khristianovich, Member,
              Academy of Sciences USSR

SUBMITTED:    September 20, 1957

AVAILABLE:    Library of Congress

Card 4/4

KUSAKOV, M.M.

PHASE I BOOK EXPLOITATION          SOV/4606

Akademiya nauk SSSR.  Institut nefti

Khimiya nefti  (Petroleum Chemistry)  Moscow, 1959.  311 p.  (Its:  Trudy,
    tom 13)  Errata slip inserted.  2,000 copies printed.

Resp. Ed.:  G.D. Gal'pern, Doctor of Chemical Sciences; Ed. of Publishing House:
    L.S. Povarov; Tech. Ed.:  V.V. Volkova.

PURPOSE:  This book is intended for organic and industrial chemists and specialists
    in petroleum technology.

COVERAGE:  This issue of the Transactions of the Petroleum Institute of the
    Academy of Sciences USSR contains twenty-five articles which review original
    laboratory experiments conducted by personnel of the Otdel khimii i tekhnologii
    nefti (Department of Chemistry and Petroleum Technology).  Individual papers
    deal with studies of the composition and properties of petroleum and petroleum
    products, methods of their separation and synthesis, and physicochemical
    characteristics of standard petroleum compounds.  The use of gaseous solutions
    to distinguish heavy raw-petroleum fractions from ozocerites, thermal processes
    of contact and catalytic refining and synthesizing, and theoretical problems

Card 1/6

SOV/4606

Petroleum Chemistry

in the pre-refining treatment of petroleum are also discussed. References accompany each article.

Card 2/6

Petroleum Chemistry

SOV/4606

Card 3/6

Petroleum Chemistry

SOV/4606

Zhuze, T.P., and B.K. Sheremeta. An Adsorption Method of Refining Raw
Ozocerites Using Compressed Gases for Extraction

280

Petrov, A.A., and M.M. Kusakov. Study of Rheological Properties of
Surface Layers at a Petroleum—Water Interface

287

AVAILABLE: Library of Congress

Card-6/6

JA/dwm/sfm
1-17-61

KUSHKOV, M. M.

SOV/5055

PHASE I BOOK EXPLOITATION

Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh. 3d, 1958.

Gidrodinamicheskaya teoriya smazki. Opory skol'zheniya. Smazka i smazochnye materialy (Hydrodynamic Theory of Lubrication. Slip Bearings. Lubrication and Lubricant Materials) Moscow, Izd-vo AN SSSR. 422 p. Errata slip inserted. 3,800 copies printed. (Series: Its: Trudy, v. 3)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Eds. for the Section "Hydrodynamic Theory of Lubrication and Slip Bearings": Ye. M. Gutyar, Professor, Doctor of Technical Sciences, and A. K. D'yachkov, Professor, Doctor of Technical Sciences; Resp. Ed. for the Section "Lubrication and Lubricant Materials", G. V. Vinogradov, Professor, Doctor of Chemical Sciences; Ed. of Publishing House: M. Ya. Klekanov; Tech. Ed.: O. M. Gus'kova.

PURPOSE: This collection of articles is intended for practicing engineers and research scientists.

COVERAGE: The collection, published by the Institut mashinovedeniya AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines) which was held April 9-15, 1958. Problems discussed were in ... theory of Lubrication and

Hydrodynamic Theory (Cont.)     SOV/5055

KUSAKOV, M.M.; TAIROV, N.D.

Wetting quartz with hydrocarbon liquids and water under high
pressures and temperatures. Dokl.AN Azerb.SSR  no.11:1019-1023
'59.                    ..                        (MIRA 13:4)

1. Azerbaydzhanskiy nauchno-issledovatel'skiy institut po dobyche
nefti. Predstavleno akademikom AN Azerbaydzhanskoy SSR M.F.
Nagiyevym.
                    (Wetting)  (Quartz)

BOGOMOLOVA, A.F.; KOCHESHKOV, A.A.; KRYLOV, A.P.; KUSAKOV, M.M.

Experimental study of oil recovery in waterflood operations in
the presence of free gas.  Trudy VNII  no.25:73-79  '59.
(MIRA 15:4)

1. IGRGI AN SSSR.
(Oil reservoir engineering)

24 (7), 5 (4)

AUTHORS:     Kusakov, M. M., Shishkina, M. V.            SOV/48-23-10-31/39

TITLE:       The Absorption Spectra of the Hydrocarbons of the Indan
             Series in the Near Ultraviolet Range

ABSTRACT:    By means of infrared and Raman analysis indan and its methyl-
             ated homologues were found in a number of petroleum fractions.
             In order to obtain exact characteristics of the indan homo-
             logues, the hydrocarbons of indan were synthetized with one,
             two, and three substituents of various structures at the
             Laboratoriya khimii nefti Instituta neftekhimicheskogo sinteza
             AN SSSR (Laboratory for Petroleum Chemistry of the Institute
             for the Petroleum-chemical Synthesis of the AS USSR). By means
             of a photoelectric spectrophotometer the absorption spectra of
             the solutions of indan and 14 of its derivatives in isooctane
             were investigated. The absorption spectra of ethyl-, isopro-
             pyl-, isobutyl-, ternary butyl-, isoamyl-, and 2-ethyl-hexyl
             indan all had bands with maxima at 2765, 2710, 2680, and 2630 Å.
             This showed that the spectra were practically independent of
             the structure of the substituent if the latter was saturated.

Card 1/2

The Absorption Spectra of the Hydrocarbons of the      SOV/48-23-10-31/39
Indan Series in the Near Ultraviolet Range

The absorption spectrum of cyclopentyl-indan was found to be
shifted in the direction of longer wave lengths by 10 - 15 Å as
compared to that of 5-alkyl indans, which is a consequence of
the naphthene character of the substituent. The spectra of the
2-hexyl indan and isobutyl indan are practically equal to that
of 1-methyl indan (maxima at 2735, 2665, 2605, and 2545 Å). In
the following the spectra of the di-substituted indans with
ethyl-, isopropyl- and isobutyl groups in the benzene ring, as
well as those of the trisubstituted indans are briefly dis-
cussed. In conclusion it is said that the distribution of the
intensities in the absorption bands does not depend on the
structure of the substituting groups. There are 9 references,
6 of which are Soviet.

ASSOCIATION:  Institut neftekhimicheskogo sinteza Akademii nauk SSSR (Insti-
tute for Petroleum-chemical Synthesis of the Academy of
Sciences, USSR)

Card 2/2

KUSAKOV, M.M.; MEKENITSKAYA, L.I.

Study of the state of bound water on models of oil and gas
reservoirs. Trudy MINKHIGP no.25:302-313 '59. (MIRA 15:5)
(Oil field brines)

5(3)

SOV/80-32-5-36/52

AUTHORS:  Vinogradov, G.V., Kusakov, M.M., Sanin, P.I., Razumovskaya, E.A., Ul'-
yanova, A.V.

TITLE:    The Interaction of Thioorganic and Thiophosphoroorganic Additions to
Oils With Metals

PERIODICAL:  Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 5, pp 1136-1141 (USSR)

ABSTRACT:  Anti-wear admixtures to oils containing sulfur-, phosphorus- and chlorine-
compounds are widely applied. The functional limits of their action is
investigated here by means of labeled atoms. They were dissolved in the
non-polar fraction of bright stock and their interaction with chromium-
manganese-silicon steel and electrolytic copper was studied. The inter-
action of steel with sulfur starts already at room temperature. The re-
action of sulfur with copper is more intense. The reactivity of di-
sulfide is higher than that of sulfide due to the higher mobility of the
sulfur atoms in the disulfide molecule. The sulfur is bound to steel and
copper irreversibly, i.e. chemically. Experiments with tributyltrithio-
phosphite labeled by $P^{32}$ and $S^{35}$ have shown that phosphorus reacts more
intensively with steel than sulfur. At $20^{\circ}C$ it is bound in the amount
of 4.2 mg/cm$^2$. At $140^{\circ}C$ and higher the decomposition of tributyltri-

Card 1/2

The Interaction of Thioorganic and Thiophosphororganic Additions to Oils With Metals     SOV/80-32-5-36/52

thiophosphaite starts which may be regarded as the upper limit of the protective action. A film of iron phosphide is more easily formed on steel than a sulfide film. At a temperature increase sulfur reacts more intensively with copper than with steel.
There are 5 graphs, 1 table and 6 references. 5 of which are Soviet and 1 American.

SUBMITTED:     January 22, 1958

Card 2/2

5(4)

AUTHORS:     Koshevnik, A. Yu., Kusakov, M. M.,            SOV/76-33-1-33/45
             Lubman, N. M.

TITLE:       The Influence of Surface Active Substances on the Motion of
             Gas Bubbles in Hydrocarbon Liquids (Vliyaniye poverkhnostno-
             aktivnykh veshchestv na dvisheniye gazovykh puzyr'kov v
             uglevodorodnykh zhidkostyakh)

PERIODICAL:  Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 1, pp 197-203
             (USSR)

ABSTRACT:    The gas diffusion in a liquid  determines the solubility of
             the gas at stationary as well as agitated phase boundaries.
             The influence  of surface active substances on the solution
             process of gases, e.g. on pressure extraction of petroleum, or
             the petroleum transportation in pipes, is of special importance.
             The influence of an adsorption layer in the separating phase
             layer had been commented upon earlier in publications (Ref 1).
             In the case under discussion tests were carried out in pure
             apolar petroleum and in real and colloidal solutions of various
             surfaces of active substances; and the influence of these
             substances on the solution kinetics of the air bubbles in
Card 1/3     petroleum was investigated. A glass implement was used for

The Influence of Surface Active Substances            SOV/76-33-1-33/45
on the Motion of Gas Bubbles in Hydrocarbon Liquids

observing the air bubbles (Fig 1) and the size of the air
bubbles was measured to an accuracy of $10\mu$ by means of a
microscope. The implement was in a thermostat at $20 \pm 0.02^{\circ}C$.
The rising velocity and the change of the air bubble size in
connection with it was determined as a function of the air
diffusion into the petroleum. Two samples of a kinematic
viscosity of 85 and 137 ccm were used as apolar petroleum and
air bubbles of a diameter from $100-900\mu$ were measured. It is
stated (Fig 3) that, in this case, the equation by Stokes
(Stoks)(2) is valid without a correction according to
Hadamard-Rybczinski (Adamar-Rybchinskiy)(Refs 4, 5), i.e. small
gas bubbles of this dimension react like solid spheres. Tests
in variously concentrated heptylic acid solutions (in petroleum
$\nu$ = 85 ccm) and with palmitic acid, hexyl and cetyl alcohol
and $\beta$-naphtylamine showed that the diffusion air/petroleum
becomes more difficult with the concentration rise of these
substances whereas the rising velocity of the air bubbles
is not influenced.

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The Influence of Surface Active Substances          SOV/76-33-1-33/45
on the Motion of Gas Bubbles in Hydrocarbon Liquids

The colloidal solution of a polymethyl-siloxane liquid in
petroleum showed, beside the diffusion stopping, also a
decrease of the rising velocity of the air bubbles.
The equation by Boussinesq (Bussine)(Ref 7) could not be
investigated for lack of experimental data. There are
5 figures and 7 references, 1 of which is Soviet.

ASSOCIATION:    Akademiya nauk SSSR,Institut nefti (Academy of Sciences,
                USSR, Institute of Petroleum)

SUBMITTED:      July 10, 1957

Card 3/3

KUSAKOV, M.M.; LUBMAN, N.M.; KOSHEVNIK, A.Yu.; KOSHELEVA, I.M.;
MEKENITSKAYA, L.I.

Studies of the physical chemistry of oil layers.  Trudy Inst. geol.
i razrab. gor. iskop. 2:71-80 '60.                    (MIRA 14:5)
                    (Oil reservoir engineering)

BOGOMOLOVA, A.F.; KUSAKOV, M.M.

Studying capillary petroleum in a model porous medium. Trudy Inst.
geol. i razrab. gor. iskop. 2:81-94 '60.                    (MIRA 14:5)
                    (Petroleum)  (Capillarity)

S/081/61/000/014/026/030
B105/B202

AUTHORS:        Kusakov M. M., Konovalova L. A., Prokof'yeva Ye. A.,
                Sidorenko V. I.

TITLE:          Effect of temperature and pressure on the viscosity of
                mixtures of mineral oils and organosilicon liquids

PERIODICAL:     Referativnyy zhurnal. Khimiya, no. 14, 1961, 543,
                abstract 14M249 (Tr. 3-y Vses. konferentsii po treniyu
                i iznosu v mashinakh. M., AN SSSR, v. 3, 1960, 262 - 270)

TEXT: The authors present experimental data on the viscosity of the
solutions of poysiloxane liquids (PL) in mineral oils at atmospheric
pressure and in the temperature interval of -50 to +60° C as well as at
pressures of up to 3000 kg/cm$^2$ in the temperature interval of from +10 to
+50° C. The viscosity measurements (dynamic) at atmospheric pressure and
at different temperatures were made by means of the capillary viscosimeter
of the type Ubbelohde and at high pressures by means of the falling-sphere
viscosimeter. The components of the mixture were mineral oils MVP and the
spindle oil AU as well as ethyl- and butyl polysiloxane liquids. The
Card 1/3

S/081/61/000/014/026/030
B105/B202

Effect of temperature and pressure ...

authors give temperature curves of the viscosity of the oils MVP, AU
and of three PL. An addition of PL to the oils MVP and AU improves the
temperature curve of their viscosity by increasing its slope in the field
of low temperatures. With simultaneous addition of PL and high-molecular
thickeners to the oil, the effect of PL mainly causes an increase of the
temperature slope of the viscosity temperature curve; the effect of the
thickener leads to an increase of the viscosity level. The effect of PL
and the thickeners becomes manifest independently. For all temperatures
investigated the effect of PL is the stronger the higher the pressure.
The results of the study of the piezometric dependence of the viscosity
of the mixture of mineral oil and PL showed that the viscosity of the
mixtures at given pressure is no additive property. The deviation of the
viscosity isobars from the linearity increases with increasing pressure
and with increasing difference in the piezometric coefficients of
viscosity of the oil and PL. With increasing pressure and at a certain
ratio of the components, the viscosity isobars of the mixtures show a
certain minimum. With addition of various commercial PL to the oils, the
Card 2/3

S/081/61/000/014/026/030
B105/B202

Effect of temperature and pressure ...

character of the change of the relative viscosity depends on pressure and
temperature. In this case relative viscosity decreases with increasing
PL content in the mixture. With increasing concentration of PL in the
mineral oil the piezocoefficient of viscosity decreases. [Abstracter's
note: Complete translation.]

Card 3/3

24.4100

AUTHOR:      Kusakov, M. M.

TITLE:       The Application of Two-dimensional Methods in Rheology

PERIODICAL:  Inzhenerno-fizicheskiy zhurnal, 1960, Vol. 3, No. 4, pp. 132-141

TEXT:  This paper brings a survey on the two-dimensional methods and the respec-
tive device which can be used in viscometry of lubricants. Such are the method
of blowing-off of a thin oil layer (Refs. 3-12), the method based on the fall of
a small ball (Refs. 15-17) and the method of the continuously varying deformation
rate of plastic bodies (Refs. 18-20). Besides, the "hook" method by D. S.
Rozhdestvenskiy (Ref. 1) is mentioned. The first method was suggested for the
first time by B. V. Deryagin (Ref. 3). The viscous liquid flows in a thin
stratum. The flow is kept up by the tangential force on the surface, which is
established by an air jet. This air jet is blown through a narrow slit in the
wall upon which the thin liquid stratum is applied. After such a "blowing-off"
of the oil stratum the latter becomes so thin that in reflected monochromatic
light the interference image of the lines of equal thickness can be observed.
Viscosity and other mechanical properties of the oil can be calculated according

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The Application of Two-dimensional Methods in
Rheology

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S/170/60/003/04/25/027
B007/B102

to the position of the lines. Various varieties of this method are mentioned.
They differ in the shape of the narrow slit. The variety with a slit like a
narrow rectangle (Fig. 1) was described in the paper by B. Deryagin, G.
Strakhovskiy, and D. Malysheva (Ref. 3). The variety with a narrow cuneiform
slit and that with a plane parallel slit, when a flow in radial direction is
present, permit the experimental determination of the dependence of the
tangential tension on the velocity gradient and also of the limit shear strength
if such is present. The theory of the first variety was worked out by M. M.
Kusakov (Ref. 7). The last variant is one with a narrow rectangular slit and a
temperature gradient across the blowing-off direction (Fig. 5). The second
method, namely the one with the falling ball, permits the determination of oil
viscosity at any temperature according to Stokes' law, of anomalies in oil
viscosity and of the temperature, of the temperature dependence of the so-called
"apparent" viscosity and of the dependence of the static limit shear strength.
The papers by A. N. Kislinskiy (Refs. 16, 17) are mentioned in this connection.
If temperature is given, the third method makes it possible experimentally to
determine the dependence of the deformation rate D on the shear strength $\tau$ or
the dependence of the effective viscosity on the deformation rate. This method
is applicable for lubricants which show only small thixotropic changes when

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The Application of Two-dimensional Methods in
Rheology

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B007/B102

pressed through a capillary tube once. The papers by G. V. Vinogradov are
mentioned, and the method based on using a capillary tube is described (Fig. 6).
The automatic capillary viscometer AKV-2 by A. A. Konstantinov and G. V.
Vinogradov is introduced in the USSR as a standard device for determinations of
lubricant viscosity (Ref. 24). A somewhat altered variety of this device, namely
the AKV-3-type, was recommended by V. Ratinov, A. Konstantinov, T. Rozenberg,
G. Bogautinova, and G. Stalikova (Ref. 25) for measuring the plasticity of bind-
ing agents. This device was made the standard device for determining the normal
viscosity of plaster for building purposes (Ref. 26). There are 6 figures and
26 Soviet references.

ASSOCIATION: Institut neftekhimicheskogo sinteza, g. Moskva (Institute of
Petroleum-chemical Synthesis, City of Moscow)

Card 3/3

85431

S/170/60/003/011/002/016
B019/B056

/l,1210

AUTHORS:     Kusakov, M. M., Koshevnik, A. Yu. Mikirov, A. Ye.

TITLE:       Investigation of the State of Water in a Hydrocarbon Fuel
by Means of Light Scatter

PERIODICAL:  Inzhenerno-fizicheskiy zhurnal, 1960 Vol. 3, No. 11,
pp. 11-17

TEXT:  On the basis of experimental results concerning the scattering of
white light, the forming of micro-drops in a fuel of the type $T$-1 (T-1)
in the case of a temperature decrease is investigated in the present
paper. In the first part, the authors investigate the influence exerted
by the drop dimensions upon light scatter by means of the Rayleigh equa-
tion. Next, the experimental set-up is described. The scattered light
incides upon a rotating spirally perforated disk. The light passing
through the perforation incides upon the cathode of a photomultiplier.
Fig. 4 shows the scattering as a function of the angle for the fuel, which
was saturated with water at $50^{\circ}$C (Curve 1) and at $20^{\circ}$C (Curve 2). Scatter-
ing was measured at $20^{\circ}$C. From the further considerations it follows that

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Investigation of the State of Water in a Hydro-  S/170/60/003/011/002/016
carbon Fuel by Means of Light Scatter          B019/B056

if the fuel is cooled, microdrops of the order of 550 to 600 microns are
formed and that they attain a concentration of several tens of millions
per cubic centimeter. Further, the conclusion is drawn that with rapid
cooling of a closed system, the excess of water is distributed uniformly
over the emulsion phase and the walls of the container. There are
5 figures, 1 table, and 8 references: 4 Soviet 1 German, and 3 US.

ASSOCIATION:   Institut neftekhimicheskogo sinteza AN SSSR, g. Moskva
               (Institute of Petroleum-chemical Synthesis of the AS USSR,
               Moscow)

SUBMITTED:     February 4, 1960

Card 2/2

X

KUSAKOV, M.M.; LUBMAN, N.M.; SHCHETSKO, M.I.

Investigating the state and distribution of water in fuel.  Khim.i
tekh.topl.i masel 5 no.8:63-66 Ag '60.                 (MIRA 13:8)

1. Institut neftekhimicheskogo sinteza AN SSSR.
        (Liquid fuels)            (Water)

SC/81-8-1-5/40

AUTHORS:     Kusakov, M.M., Prokof'yeva, Ye.A. and Shishkina, M.V.

TITLE:       Electronic Absorption Spectra of Some Indan Homologues

PERIODICAL:  Optika i spektroskopiya, 1960, Vol 8, Nr 1, pp 27-35 (USSR)

ABSTRACT:    The authors report their measurements of the electronic absorption
             spectra of indan and 15 of its derivatives. These spectra were
             obtained using a "Uvispek" spectrophotometer at wavelengths between
             2200 and 2850 Å at room temperature. Among the indan derivatives there
             were ten monosubstituted, three disubstituted and two trisubstituted
             indans. The results are shown in Figs 1-6, in the form of
             $\log \epsilon(\lambda)$, where $\epsilon$ is the molar extinction coefficient. Positions
             of the absorption maxima and minima of these compounds are listed in
             Tables 1-4. The spectrum of each compound is discussed briefly.
             There are 6 figures, 4 tables and 32 references, 13 of which are Soviet,
             14 English, 3 French and 2 German.

SUBMITTED:   July 15, 1959

Card 1/1

KUSAKOV, M.M.; RAZUMOVSKAYA' E.A.; DEKARTOV, A.P.

Radioactive indicator study of the interaction between elemental
sulfur and thin copper films in a carbon medium. Zhur. prikl.
khim. 33 no.11:2466-2470 N '60.                    (MIRA 14:4)
          (Sulfur—Isotopes)     (Copper)

S/076/60/034/007/031/042/XX
B004/B068

AUTHORS:      Kusakov, M. M. and Nekrasov, D. N.

TITLE:        Capillary Hysteresis in Rising Liquids in Capillary Tubes
              With Varying Cross Sections

PERIODICAL:   Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7,
              pp. 1602 - 1609

TEXT:  The basic problem confronting the authors was the determination
of the equilibrium point between water and petroleum in porous layers,
making allowance for capillary hysteresis occurring in capillary tubes
with variable cross sections. In this paper, capillary hysteresis in
rising liquids is investigated in a capillary tube with sinusoidally in-
creasing and decreasing circular cross section. Two calculation methods
are given. 1) From the function $U = f(h)$  (3)  ($U$ = potential energy of
gravity and surface tension; $h$ = height of ascension of the liquid in
the capillary tube), equilibrium values for $h$ were calculated on the
condition that $dU/dh = 0$  (4). The profile of the capillary tube was
characterized by the following function: $r = \alpha + \beta \sin \gamma (h + \delta)$  (7),

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Capillary Hysteresis in Rising Liquids in    S/076/60/034/007/031/042/XX
Capillary Tubes With Varying Cross          B004/B068
Sections

with $\alpha$, $\beta$, and $\gamma$ being the constants of the capillary tube:
$\alpha = 0.5(r_1 + r_2)$; $\beta = 0.5(r_1 - r_2)$; $\gamma = 2\pi/\lambda$; $\delta$ is the immersion depth
of the capillary tube into the liquid; $\lambda$ is the "period" of the capil-
lary tube. The result of calculation is shown in Fig.2. $h_1$, $h_3$, $h_5$ cor-
respond to a stable equilibrium, and $h_2$, $h_4$, $h_6$ to an unstable one. The
transition of the meniscus from a stable equilibrium to the next higher
one thus requires some energy to overcome the potential barrier. Ex-
periments with water and oil in sine-shaped glass capillary tubes gave
results in agreement with calculation. 2) From the shape of the capil-
lary tube $r = f(h)$ (5), equilibrium values for h were calculated using
the set of equations: $\varrho gh = 2\sigma/r$; $r = \alpha + \beta\sin\gamma(h + \delta)$  (10). r is the
radius of the capillary tube; $\sigma$ is the surface tension on the liquid -
air boundary; $\varrho$ is the density of the liquid; and g is the constant of
gravity. Fig.5 shows the graphical solution of this set of equations by
means of the functions $\varrho gh = f(h)$ and $2\sigma/r = f(h)$. Also when this method
was used, good agreement with experimental data was obtained.

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Capillary Hysteresis in Rising Liquids in    S/076/6./034/007/031/042/XX
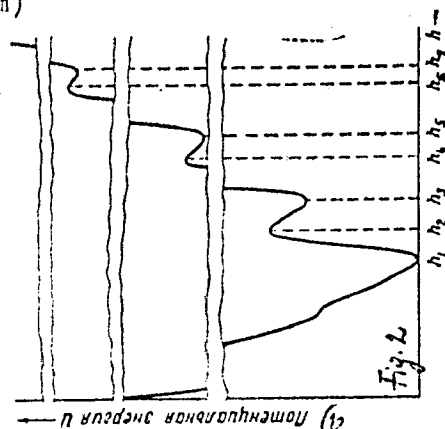Capillary Tubes With Varying Cross          B004/B068
Sections

V. V. Lebedev is mentioned. There are 7 figures, 3 tables, and 6 references: 4 Soviet, 1 French, and 1 Czechoslovakian.

ASSOCIATION:   Akademiya nauk SSSR, Institut nefti (Academy of Sciences
               USSR, Institute of Petroleum)

SUBMITTED:     October 24, 1958

Legend to Fig.2:
a) Potential energy U.

Fig.2



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